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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/624,078	07/24/2000	Goran Hageltorn	98764-U.S.	5385

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EXAMINER

MILLER, BRANDON J

ART UNIT	PAPER NUMBER
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2683

DATE MAILED: 04/05/2004

10

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/624,078

Applicant(s)

HAGELTORN ET AL.

Examiner

Brandon J Miller

Art Unit

2683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3-6 and 8-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6 and 8-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 14.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 2683

## DETAILED ACTION

### *Response*

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-4, 6, 8-14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billstrom in view of Wildey.

Regarding claims 1 Billstrom teaches improving spectrum deployment in a cellular wireless communications system having multiple adjacent cells, which provide service to a geographic area (see col. 6, lines 23-26). Billstrom teaches a cell being divided into an even number of at least four sectors (see col. 2, lines 49-52). Billstrom teaches each cell having a base station with a sectored antenna for bi-directional communication with customer premise equipment located in sectors of a cell (see col. 2, lines 49-59 and col. 3, lines 53-59). Billstrom teaches base stations in adjacent cells being arranged in a grid configuration (see col. 3, lines 30-44). Billstrom teaches selecting at least one frequency set for upstream and downstream communication between the base stations and customer premise equipment (see col. 3, lines 60-65 and col. 4, lines 7-13). Billstrom teaches employing polarization diversity between communications in adjacent sectors and reducing interference zones between adjacent sectors in

Art Unit: 2683

a multi-cell configuration (see col. 1, lines 62-67 and col. 2, lines 1-3). Billstrom does not specifically teach using a combination of polarization diversity and rotating sectors to reduce the number of interference zones between adjacent sectors, or rotating the sectors in each cell such that dividing lines between sectors are offset relative to the grid configuration by a configurable angel. Wildey teaches using rotating sectors to reduce the number of interference zones between adjacent sectors (see abstract and pg. 6, lines 46-55). Wildey teaches rotating the sectors in a cell such that dividing lines between sectors are offset relative to the grid configuration by a configurable angel (see abstract and pg. 6, lines 23-28 & 46-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the invention adapt to include using a combination of polarization diversity and rotating sectors to reduce the number of interference zones between adjacent sectors, and rotating the sectors in each cell such that dividing lines between sectors are offset relative to the grid configuration by a configurable angel because this would allow for minimized interference at a point which lies in line with and beyond adjacent sites in a network.

Regarding claim 3 Widley teaches a configurable angle that is in the range  $\pm 17.5$  degrees to  $\pm 27.5$  degrees (see abstract and pg. 6, lines 23-28 & 46-52).

Regarding claim 4 Billstrom and Widley teaches a device as recited in claim 3 except for an angle that is  $\pm 22.5$  degrees. Widly teaches a configurable angle that is in the range  $\pm 17.5$  degrees to  $\pm 27.5$  degrees (see abstract and pg. 6, lines 23-28 & 46-52). Even though Billstrom and Widley do not teach a configurable angle that is specifically  $\pm 27.5$  degrees it would have been obvious to one of ordinary skill in the art to rotate the angle to a desired

Art Unit: 2683

specification because this would allow for the possibility of improved signal coverage of a plurality of reception areas in terms of the degree of interference.

Regarding claim 6 Billstrom teaches a device as recited in claim 1 except for nine cells arranged in a three by three grid configuration (see col. 3, lines 30-34 and FIG. 2A).

Regarding claim 8 Billstrom teaches a separate frequency set that is used to provide service to one or more interference zones (see col. 4, lines 1-10).

Regarding claim 9 Widley teaches providing inadequate coverage to one or more interference zones (see col. 9, lines 15-21).

Regarding claim 10 Billstrom and Widley teach a device as recited in claim 6 and is rejected given the same reasoning as above.

Regarding claim 11 Wildey teaches multiple clusters of four by four grid configurations (see col. 8, lines 7-9 and Fig. 5).

Regarding claim 12 Billstrom teaches a system for improving frequency spectrum deployment in a cellular wireless communications system having multiple adjacent cells to provide communications service to a geographic area (see col. 1, lines 62-67 and col. 6, lines 23-26). Billstrom teaches a cell being divided into an even number of at least four cells (see col. 2, lines 49-52). Billstrom teaches each cell having a base station with a sectored antenna for bi-directional communication with customer premise equipment located in sectors of a cell (see col. 2, lines 49-59 and col. 3, lines 53-59). Billstrom the base stations in adjacent cells being arranged in a grid configuration (see col. 3, lines 30-44). Billstrom teaches a directional antenna at each CPE for receiving and transmitting communication from a base station (see col. 3, lines 53-59). Billstrom teaches selecting at least one frequency set for upstream and downstream

Art Unit: 2683

communication between the base stations and customer premise equipment (see col. 3, lines 60-65 and col. 4, lines 7-13). Billstrom teaches employing polarization diversity between communications in adjacent sectors and reducing interference zones between adjacent sectors in a multi-cell configuration (see col. 1, lines 62-67 and col. 2, lines 1-3). Billstrom does not specifically teach using a combination of polarization diversity and cell configuration to reduce the number of interference zones between adjacent sectors, or configuring the sectors in each cell such that dividing lines between sectors are offset relative to the grid configuration by a configurable angel. Wildey teaches using rotating sectors to reduce the number of interference zones between adjacent sectors (see abstract and pg. 6, lines 46-55). Wildey teaches configuring the sectors in a cell such that dividing lines between sectors are offset relative to the grid configuration by a configurable angel (see abstract and pg. 6, lines 23-28 & 46-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the invention adapt to include using a combination of polarization diversity and cell configuration to reduce the number of interference zones between adjacent sectors, and configuring the sectors in each cell such that dividing lines between sectors are offset relative to the grid configuration by a configurable angel because this would allow for minimized interference at a point which lies in line with and beyond adjacent sites in a network.

Regarding claim 13 Billstrom and Widley teach a device as recited in claim 4 and is rejected given the same reasoning as above.

Regarding claim 14 Billstrom teaches subdividing each cell into four substantially equal sectors (see col. 3, lines 45-50 and FIG. 3).

Art Unit: 2683

Regarding claim 16 Billstrom teaches polarization in one direction of a grid configuration that alternates between vertical polarization and horizontal polarization (see col. 2, lines 55-59).

Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billstrom in view of Wildey and Bustamante.

Regarding claim 5 Billstrom and Wildey teach a device as recited in claim 1 except for four cells arranged in a two by two grid configuration and the configurable angle is  $\pm 22.5$ . Widly does teach a configurable angle that is in the range  $\pm 17.5$  degrees to  $\pm 27.5$  degrees (see abstract and pg. 6, lines 23-28 & 46-52). Bustamante teaches four cells arranged in a two by two grid configuration (see col. 7, lines 19-20 and Figure 6a). Even though Billstrom and Widley do not teach a configurable angle that is specifically  $\pm 22.5$  degrees it would have been obvious to one of ordinary skill in the art to rotate the angle to a desired specification because this would allow for the possibility of improved signal coverage of a plurality of reception areas in terms of the degree of interference.

Regarding claim 15 Billstrom, Widley, and Bustamante teach a device as recited in claim 5 and is rejected given the same reasoning as above.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 3-6, and 8-16 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2683

Dipiazza U.S. Patent Application 6,141,557 discloses LMDS system having cell-site diversity and adaptability.

Bossard U.S. Patent Application 5,668,610 discloses a LMDS transmitter array with polarization-diversity sub-cells.

Dixon U.S. Patent Application 6,275,704 discloses a multiple access communication system with polarized antennas.

Roark U.S. Patent Application 6,404,751 discloses a common control channel dynamic frequency assignment method and protocol.

Boch U.S. Patent Application 6,205,337 discloses use of sectorized polarization diversity as a means of increasing capacity in cellular wireless systems.

Bossard U.S. Patent Application 5,949,793 discloses a transmission of digital and analog signals in the same radio band.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon J Miller whose telephone number is 703-305-4222. The examiner can normally be reached on Mon.-Fri. 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 703-308-5318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.




Art Unit: 2683

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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March 8, 2004

  
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